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BIOLOGICAL ASSESSMENT
FOR THE CRESTON/BLUE GAP NATURAL GAS PROJECT

THREATENED, ENDANGERED, AND CANDIDATE SPECIES

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Prepared for

Great Divide Resource Area
Rawlins District
Bureau of Land Management
Rawlins, Wyoming

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By

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August 1994

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1.0 INTRODUCTION

The Creston/Blue Gap Natural Gas Project, as proposed by Snyder Oil Corporation (SOCO), Amoco Production Company, Union Pacific Resources Company, Ensign Oil and Gas New Mexico, Inc., and other operators, would involve the exploration for and development of natural gas and oil reserves in southwestern Carbon and southeastern Sweetwater Counties, Wyoming, as discussed in the *Creston/Blue Gap Draft Environmental Impact Statement* (DEIS) (Bureau of Land Management [BLM] 1994). This Biological Assessment (BA) discusses the potential effects of the proposed project on federal threatened, endangered, and candidate (TE&C) species occurring on or adjacent to the Creston/Blue Gap Area (CBGA) (Table 1.1), and presents recommendations to assure that the construction and subsequent operation of the proposed project would neither jeopardize the species' continued existence nor result in the destruction or adverse modification of their critical habitats. Analysis of effects of this proposed project on federally listed TE&C species ensures compliance with the provisions of the Endangered Species Act of 1973, P.L. 93-205 (87 Stat. 884), as amended.

TE&C species are those that have been specifically designated as such by the U.S. Fish and Wildlife Service (USFWS). Threatened species are those species that are likely to become endangered in the foreseeable future throughout all or a significant portion of their ranges. Endangered species are those that are in danger of extinction throughout all or a significant portion of their ranges. Category 1 Candidate (C1) species are those for which the USFWS has sufficient data to list as T&E, but for which proposed rules have not yet been issued. Category 2 Candidate (C2) species are those that are being considered for listing as threatened or endangered, but sufficient data are not available at this time for a listing decision. Category 3C (3C) species are those that were once considered for listing as T&E, but now no longer receive such consideration; they are more widespread or abundant than previously believed or are not subject to identifiable threats.

Table 1.1 Federal Threatened, Endangered, and Candidate Animal and Plant Species and Their Potential Occurrence on the CBGA, Carbon and Sweetwater Counties, Wyoming.[1]

Species		Federal Status[2]	Potential Occurrence on CBGA[3]
Common Name	Scientific Name		
MAMMALS			
Black-footed ferret	*Mustela nigripes*	E	X
Swift fox	*Vulpes velox velox*	C2	X
BIRDS			
Bald eagle	*Haliaeetus leucocephalus*	E	U
Black tern	*Chlidonias niger*	C2	R
Columbian sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	C2	X
Ferruginous hawk	*Buteo regalis*	C2	C
Loggerhead shrike	*Lanius ludovicianus*	C2	C
Long-billed curlew	*Numenius americanus*	3C	U
Mountain plover	*Charadrius montanus*	C1	U
Northern goshawk	*Accipiter gentilis*	C2	R
Peregrine falcon	*Falco peregrinus*	E	R
White-faced ibis	*Plegadis chihi*	C2	U
Whooping crane	*Grus americana*	E	X
FISH			
Bonytail chub	*Gila elegans*	E	X, DG
Colorado River cutthroat trout	*Oncorhynchus (Salmo) clarki pleuriticus*	C2	X, DL
Colorado squawfish	*Ptychocheilus lucius*	E	X, DG
Flannelmouth sucker	*Catostomus latipinnis*	C2	R, DL, DG
Humpback chub	*Gila cypha*	E	X, DG
Razorback sucker	*Xyrauchen texanus*	E	X, DG
Roundtail chub	*Gila robusta*	C2	X, DL, DG

Table 1.1 (Continued)

Species		Federal Status[2]	Potential Occurrence on CBGA[3]
Common Name	Scientific Name		
PLANTS			
Contracted Indian ricegrass	*Oryzopsis contracta*	C2	DOC
Gibben's beardtongue	*Penstemon gibbensii*	C2	SUS

[1] Adapted from USFWS (October 6, 1993), Wyoming Game and Fish Department (1993), and Wyoming Natural Diversity Data Base (1991, 1993a, 1993b).

[2] Federal status:

E = Endangered
C1 = Category 1
C2 = Category 2
3C = Category 3C

[3] Species occurrence:

C = Locally common; species could occur in abundant numbers, but only in widely scattered or isolated populations. Populations or individuals probably will be encountered during construction and field operation, but only at a limited number of sites. Species could be present for a significant part of a year (e.g., breeding season, summer resident) or the entire year.
U = Uncommon; species may be present in the project area, but in such low numbers or in such small and widely scattered populations that an encounter during construction and field operation is unlikely. The species could be present for a significant part of the year (e.g., breeding season, summer resident) or the entire year.
R = Rare; species may be in impact area for just a few days or hours (e.g., stopping over during migration), or the species has only occasionally or rarely been sighted in the project area. Encounters during construction and field operation are very unlikely.
X = Not probable; there has been no recent historical record of the species' occurrence in the project area; probability of encountering the species during construction and field operation is extremely unlikely.
DG = Downstream resident of Colorado River System.
DL = Downstream resident of Little Snake River.
DOC = Species documented within the CBGA.
SUS = Species suspected to occur within the CBGA.

2.0 PROJECT DESCRIPTION

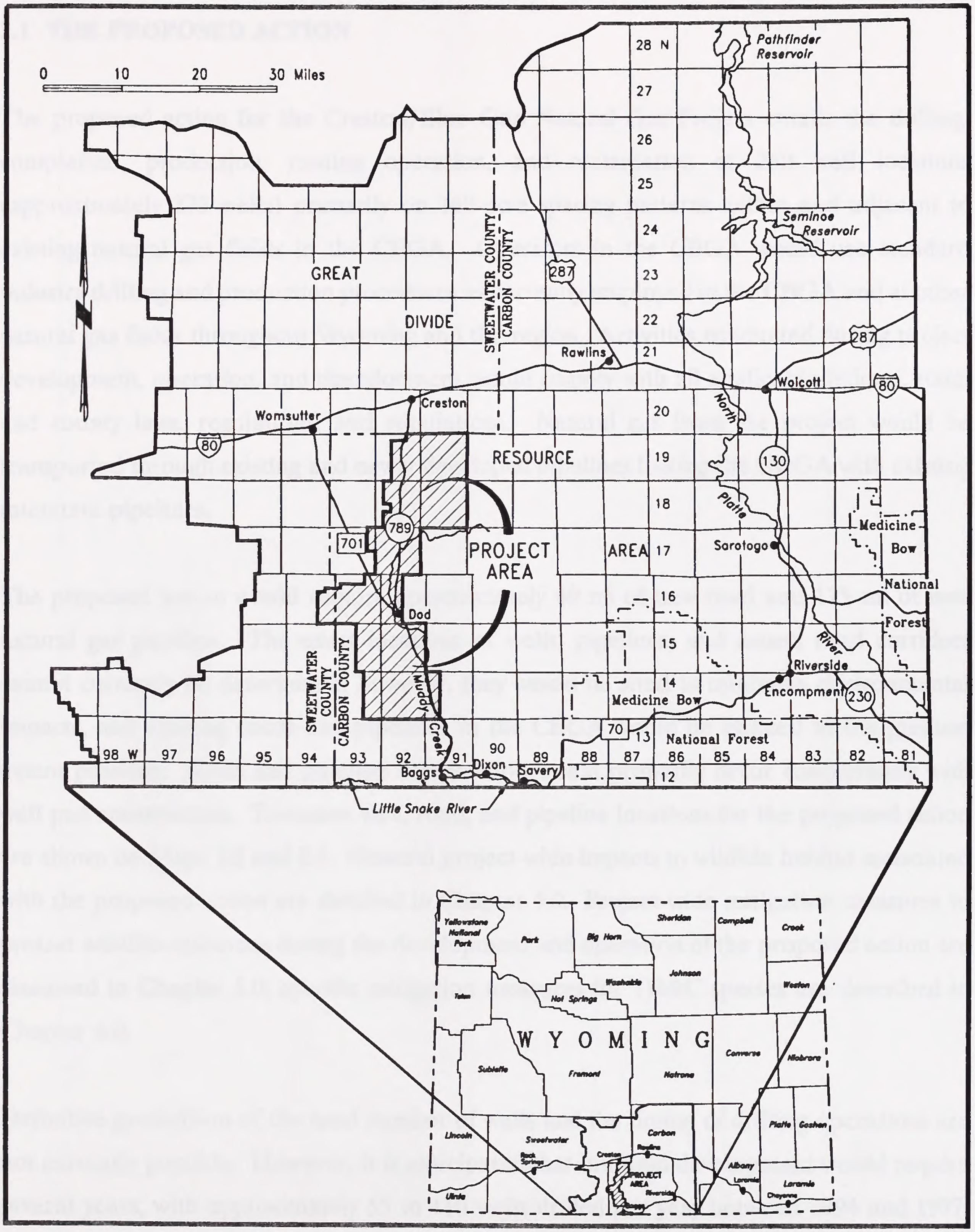
SOCO and other area operators propose to explore and develop natural gas reserves on approximately 207,746 acres (144,497 federal, 54,463 private, and 8,786 state) in the CBGA of Carbon and Sweetwater Counties, Wyoming (Map 2.1). The CBGA is predominantly located in southwestern Carbon County, Wyoming, within Townships 14 through 19 North, Ranges 91 through 94 West. The CBGA is approximately 35 mi southwest of Rawlins, with access from Interstate 80 to Creston and south along State Highway 789, which bisects the area from north to south. The entire CBGA is within the BLM Great Divide Resource Area of the Rawlins BLM District.

Four alternatives were analyzed in the EIS (BLM 1994) and this BA:

- the proposed action - 250 locations with approximately 275 wells on a 160-acre spacing pattern;
- Alternative 1 - 175 locations with approximately 200 wells on a 160-acre spacing pattern;
- Alternative 2 - 300 locations with approximately 330 wells on both 160-acre and 80-acre spacing patterns; and
- no action - the project would not proceed.

Additional alternatives involving more wells on closer spacing patterns and fewer wells on less dense spacing patterns were considered but rejected for economic and/or environmental reasons.

Summary descriptions of the four alternatives are presented below; specific details of construction and production activities can be found in BLM (1994). Project documents (e.g., Environmental Impact Statements) and other information are located at the BLM Great Divide Resource Area Office in Rawlins, Wyoming.



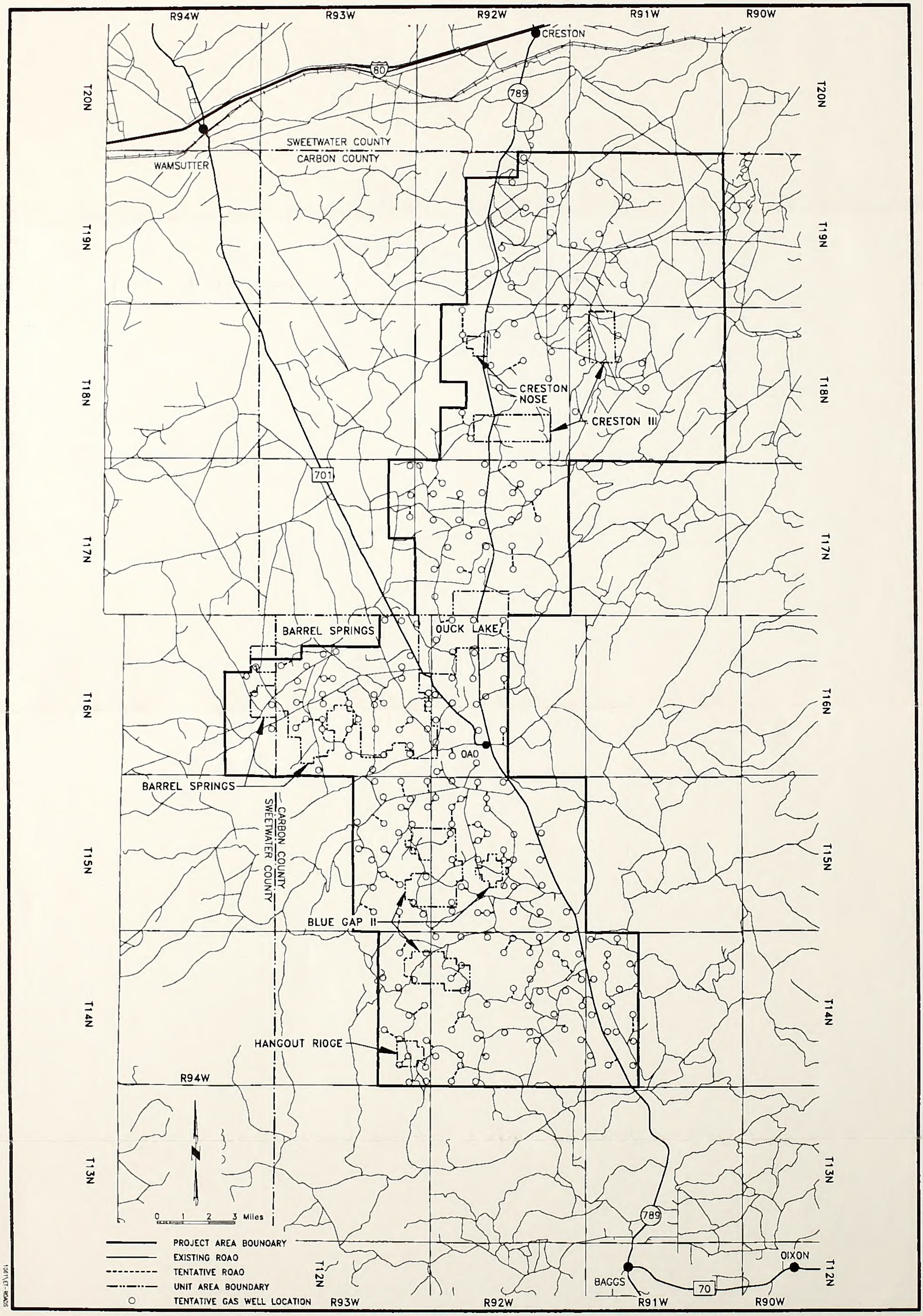
Map 2.1 General Location Map, Creston/Blue Gap Natural Gas Project, Carbon and Sweetwater Counties, Wyoming, 1994.

2.1 THE PROPOSED ACTION

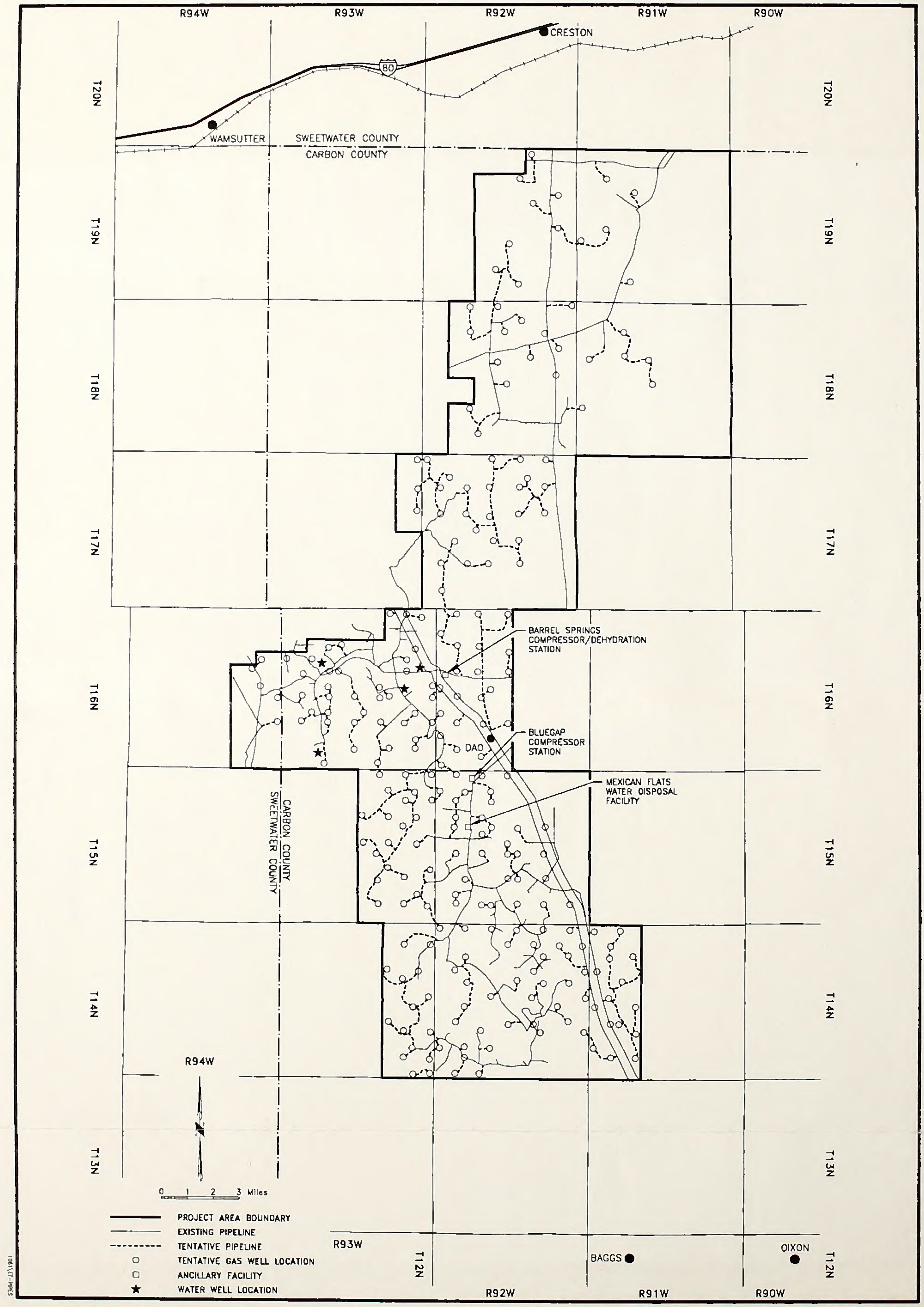
The proposed action for the Creston/Blue Gap Natural Gas Project entails the drilling, completion, production, routine operation, and reclamation of 250 well locations (approximately 275 wells) primarily on 160-acre spacing patterns within and adjacent to existing natural gas fields in the CBGA. Operators in the CBGA would use standard industry drilling and production procedures as currently employed in the CBGA and at other natural gas fields throughout Wyoming and the region. Activities conducted during project development, operation, and abandonment would comply with all applicable federal, state, and county laws, regulations, and stipulations. Natural gas from the project would be transported through existing and newly developed pipelines linking the CBGA with existing interstate pipelines.

The proposed action would require approximately 40 mi of new road and 115 mi of new natural gas pipeline. The exact locations of wells, pipelines, and access road corridors cannot currently be determined; however, they would be sited to minimize environmental impacts, and existing roads and pipelines in the CBGA would be utilized to the greatest extent possible. Road and pipeline construction would primarily occur concurrently with well pad construction. Tentative well, road, and pipeline locations for the proposed action are shown on Maps 2.2 and 2.3. General project-wide impacts to wildlife habitat associated with the proposed action are detailed in Chapter 4.0. Project-wide mitigation measures to protect wildlife resources during the development and operation of the proposed action are discussed in Chapter 5.0; specific mitigation measures for TE&C species are described in Chapter 6.0.

Definitive predictions of the total number of wells and the timing of drilling operations are not currently possible. However, it is anticipated that full field development would require several years, with approximately 55 to 110 wells drilled per year between 1994 and 1997. The proposed drilling schedule would require a maximum of 9 drill rigs during the peak



Map 2.2 Tentative Well and Road Locations, Creston/Blue Gap Natural Gas Project, Carbon and Sweetwater Counties, Wyoming, 1994.



Map 2.3 Tentative Well and Pipeline Locations, Creston/Blue Gap Natural Gas Project, Carbon and Sweetwater Counties, Wyoming, 1994.

drilling season (i.e., summer and fall). Each drill rig would be operated on a 24-hr basis and require 3 crews of 5 people. As many as 30 workers may be at a rig site for short periods to conduct specific tasks such as fracturing. It would take approximately 20 days to drill each well. To minimize the extent of ground disturbance and maximize resource recovery, directional drilling may be used in certain areas (e.g., steep slopes, crucial winter range) such that multiple wells would be completed at a single location, where economically feasible. Production operations would require approximately 10 to 15 people for the life-of-project (LOP), which is anticipated to be approximately 30 to 50 years.

Areas disturbed during drilling and initial construction that are not required for production (e.g., portions of well locations, pipeline rights-of-way, roads to unproductive wells) would be reclaimed as soon as practical. When gas reserves have been depleted, wells would be plugged and abandoned using procedures designed to protect subsurface aquifers. Also, surface facilities (e.g., compressor stations, fluid storage tanks) would be removed, pipelines purged and abandoned in place, roads closed per landowner or BLM request, and disturbed areas reclaimed.

2.2 ALTERNATIVE 1

The future performance of wells proposed on the CBGA may indicate that fewer locations/wells would be required to adequately ensure the optimal recovery of natural gas. Therefore, Alternative 1 to the proposed action is the development of 175 locations (200 wells). This could potentially result in a lengthened LOP--40 to 50 years--since well spacing patterns in some areas may be less dense and additional time may be required to adequately recover natural gas reserves.

Project activities as described in the proposed action would be essentially the same under implementation of Alternative 1 except project impacts would be reduced by approximately 30%. One hundred and seventy-five well locations (200 wells), 28 mi of new road, and

81 mi of new pipeline would be developed, and approximately 1,186 acres of existing disturbance from roads, pipelines, and ancillary facilities would be utilized under Alternative 1. Ancillary facility use and expansion would be the same as for the proposed action. The total number of person-years required for project development and implementation would decrease by approximately 25% from that anticipated under the proposed action, assuming the LOP is increased by 10 years.

2.3 ALTERNATIVE 2

Reservoir performance may indicate the need for closer well spacing in some areas of the CBGA to ensure optimal gas recovery. Therefore, another alternative to the proposed action (Alternative 2) would involve gas well development in some areas of the CBGA on an 80-acre spacing pattern (300 total well locations, 330 total wells). Under this alternative, gas would likely be recovered in approximately 20 to 30 years.

As with Alternative 1, project activities as described in the proposed action would be essentially the same under implementation of Alternative 2. Project impacts under Alternative 2 would be increased by approximately 20%. Three hundred well locations (330 wells), 48 mi of new road, and 138 mi of new pipeline would be developed for Alternative 2. Approximately 2,028 acres of existing disturbance from roads, pipelines, and ancillary facilities would be utilized under Alternative 2, and ancillary facilities would be expanded to the same extent as indicated for the proposed action. The total number of person-years required for project development and implementation would be approximately 15% higher than that anticipated under the proposed action, assuming the LOP is decreased by approximately 10 years.

2.4 NO ACTION

For the Creston/Blue Gap Natural Gas Project, the no action alternative would deny further development of SOCO's and other operators' proposed action and alternatives, including drilling operations and construction of roads and pipelines. The denial of the right to fully develop the subject lease could void the lessee's contractual rights and the natural gas resource would not be extracted and utilized. The no action alternative provides a baseline against which all other options can be compared. No further change in the physical resources of the project area would occur under the no action alternative. The project area's TE&C species would not be impacted, and their habitats would not be altered.

3.0 METHODS

A list of TE&C animal and plant species that potentially occur on or adjacent to the project area was compiled from several sources, including the Wyoming Game and Fish Department (WGFD) Wildlife Observation System Records (WGFD 1993), The Nature Conservancy Wyoming Natural Diversity Database (WNDD) (WNDD 1993a, 1993b, 1994), a letter to the BLM from the Wyoming State Supervisor's Office of the USFWS (USFWS October 6, 1993), and BLM Great Divide Resource Area Biologists. All TE&C species in the region are discussed in Chapter 6.0 of this BA.

Information pertaining to the listed TE&C animal and plant species was gathered from existing sources (i.e., the above references) and through on-site field reconnaissance. A brief field reconnaissance of the project area and surrounding environs was conducted by Mariah personnel to determine the types and extent of habitats available to TE&C species.

4.0 GENERAL IMPACTS TO WILDLIFE RESOURCES

This chapter presents a description of the general impacts to wildlife resources that could result from implementation of the proposed Creston/Blue Gap Natural Gas Project.

Impacts to wildlife resources from construction, drilling, and completion activities would generally be loss of habitat and disruption of activities due to human presence. Impacts to wildlife would continue during the LOP as a result of disturbance due to increased human activities. Given adherence to wildlife protection measures described in the project draft EIS (BLM 1994), impacts to wildlife would likely range from negligible to moderate during the initial construction phase, for the LOP, and until areas are adequately revegetated.

The proposed action would entail 250 new well locations, 40 mi of new road, 115 mi of new pipelines, and a new compression facility, and would result in approximately 1,248 acres of new disturbance. This acreage represents about 0.6% of the CBGA. LOP disturbance, which includes 1,691 acres of existing road, pipeline, and ancillary facility disturbance but excludes acreage reclaimed after wells, pipelines, and roads are in place, would be 2,249 acres, or 1.1% of the CBGA. Alternative 1 would consist of 175 new well locations, 28 mi of new road, 81 mi of new pipelines, and a new compression facility and would result in new disturbance of 878 acres or 0.4% of the CBGA. LOP disturbance under Alternative 1 would be approximately 1,579 acres (i.e., 0.8% of the CBGA). The 300 new well locations, 48 mi of new road, 138 mi of new pipeline, and new compression facility of Alternative 2 would result in an initial disturbance of 1,496 acres (0.7% of the CBGA); LOP disturbance under Alternative 2 would be approximately 2,695 acres or 1.3% of the CBGA. Overall, impacts to flora and fauna would decrease approximately 30% as a result of implementation of Alternative 1 as compared to the proposed action. Impacts resulting from implementation of Alternative 2 would be approximately 25% greater than those resulting from the proposed action. For the most part, habitats in the affected areas are

common throughout the CBGA. Impacted areas within the CBGA represent from 0.4 to 1.3% of the entire CBGA.

In addition to the direct loss of habitat due to construction, short-term disturbances from drilling and construction activities and traffic may impede utilization of habitat immediately adjacent to these areas. Also, some plants and animals may be killed during the construction phase as a result of surface-disturbing activities. Mortality is a potential direct impact that may occur due to road kill associated with increased traffic in the CBGA for the LOP. For fisheries, initial construction and drilling activities may degrade water quality through increased sedimentation and runoff. Although not currently anticipated, some water may be withdrawn from Muddy Creek during the drilling phase, resulting in decreased flows to both instream and downstream fisheries. With implementation of the mitigation measures outlined in Chapters 5.0 and 6.0, these impacts would likely be negligible to moderate in intensity for most wildlife species during the construction phase and throughout the LOP.

The only TE&C species on the CBGA likely to be impacted by project activities are the ferruginous hawk, loggerhead shrike, and contracted Indian ricegrass. The proposed project is unlikely to adversely affect these species for both the short-term and LOP (see Chapter 6.0 for details).

Other oil and gas projects in the region surrounding the CBGA include developments in the Mulligan Draw Project Area (MDPA) and the Greater Wamsutter Analysis Area (GWAA). Potential cumulative impacts from these three projects could result in the loss of approximately 0.5% of available wildlife habitat within the combined project areas. The potential future addition of 900 wells within the CBGA would increase this loss of habitat to approximately 1.4%. Overall, cumulative impacts to wildlife resources are expected to be negligible; cumulative impacts to TE&C species would be dependent on site-specific

analysis, although it is unlikely that these species would be affected, given adherence to stipulated avoidance and mitigation measures.

5.0 GENERAL PROJECT-WIDE WILDLIFE MITIGATION MEASURES

This section provides some of the measures that would be utilized to avoid, minimize, or mitigate potential wildlife impacts associated with implementation of the proposed Creston/Blue Gap Natural Gas Project. These measures apply to both the proposed action and two alternatives.

Mitigation measures identified in this BA would be implemented on federal lands. Development activities on state lands would be conducted in accordance with all appropriate state laws, rules, and regulations. General mitigation measures for wildlife resources on the CBGA are presented below.

1. Well locations, access roads, and pipelines would be selected and designed to minimize disturbances to areas of high wildlife habitat value, including wetlands and riparian areas.

2. Roads not required for routine operation and maintenance of producing wells and ancillary facilities would be permanently blocked, recontoured, reclaimed, and revegetated, as would disturbed areas associated with permanently plugged and abandoned wells.

3. Removal or disturbance of vegetation would be kept to a minimum through construction site management (e.g., by utilizing previously disturbed areas, using existing ROWs, designating limited equipment/materials storage yards and staging areas, scalping, etc.).

4. Sufficient topsoil to facilitate revegetation would be segregated from subsoils during all construction operations and would be returned to the surface upon completion of operations, where feasible. Topsoil stockpiles would be

revegetated or otherwise protected to prevent erosion and maintain some soil microflora/microfauna.

5. Removed vegetation would be replaced with plants of equal value using BLM-approved procedures.

6. Surface disturbance within 0.75 mi of active raptor nests (i.e., those used within the last three years) would be avoided during the nesting season of February 1 through July 31. If the area must be disturbed, project activities would be conducted outside the nesting season. Mitigation for disturbance to raptor nests would be designed on a site-specific basis in consultation with the BLM, USFWS, and WGFD. SOCO and other area operators would notify the BLM immediately if raptors are found nesting on project facilities, and area operators would assist the BLM as necessary in erecting artificial nesting structures.

7. Construction and drilling activities on big game crucial winter range as delineated by the BLM and WGFD would not be allowed during crucial winter periods from November 15 through April 30. Proposed wells, roads, and pipelines located within crucial winter range would be scheduled for development during the spring, summer, or fall months.

8. Known active sage grouse leks and adjacent public land areas (2.0 mi radius from lek centers) would be avoided during the breeding and nesting seasons from March 1 through June 30; no construction activities would be conducted on public lands within 0.25 mi of known lek sites. Project activities on public lands other than routine production and well maintenance would occur within 2.0 mi of lek centers only outside the breeding and nesting seasons.

9. Reserve pits and other areas potentially hazardous to wildlife would be netted (1 inch mesh) and fenced to prohibit wildlife access as directed by the BLM. All reserve pits would be backfilled when dry and would be netted within 72 hours of the time the drilling rig substructure is removed from the well location unless it is determined by the BLM that no toxic or oil-based substances are present in the pits.

10. All production facilities (e.g., compressors) would be muffled such that noise levels would not exceed a maximum of 55 dBA at 500 ft from facilities.

11. To minimize wildlife mortality due to vehicle collisions, SOCO and other area operators would advise project personnel regarding appropriate speed limits on the CBGA, and roads would be reclaimed as soon as possible after they are no longer required.

12. To protect plant populations and wildlife habitat, project-related travel would be restricted to established project roads; no off-road travel would be allowed.

13. Potential impacts to fisheries would be minimized by using proper erosion control techniques (e.g., water bars, jute netting, rip-rap, mulch). Construction within 500 ft of open water and 100 ft of intermittent and ephemeral channels would be avoided where possible, and stream crossings for roads and pipelines would be constructed during the period of lowest flow (i.e., late summer and fall). All required stream crossings would occur perpendicular to flow, where possible.

14. Surveys for TE&C species, if deemed necessary by the BLM, would be implemented during on-site inspections of proposed ROWs and well locations conducted as components of ROW application and Application for Permit to

Drill (APD) review processes. Surveys for TE&C plant and animal species would focus on species known to occur on the CBGA as well as those potentially occurring on the area. If TE&C species are found on the area, construction activities would be delayed until such activities would not disturb these species. Habitats where TE&C species are likely or are known to occur would be avoided where possible.

Although it is very unlikely that water will be withdrawn from Muddy Creek for use in drilling activities, minimal amounts may be used for the drilling, completion, and testing at some wells. Any reduction of flows from Muddy Creek, the Little Snake River, and the Colorado River could potentially impact TE&C fish species within these drainages (i.e., bonytail chub, Colorado River cutthroat trout, Colorado squawfish, flannelmouth sucker, humpback chub, razorback sucker, and roundtail chub). In order to mitigate any potential impacts to these TE&C species resulting from water removal from Muddy Creek, flows would be augmented by discharging suitable quality groundwater to North Barrel Springs Draw, a tributary of Muddy Creek. If it is determined that surface water flows cannot be augmented, impacts to these TE&C fish species would be mitigated by a one-time monetary payment of approximately $12.00 per acre-foot of the average annual water depletion to the USFWS Conservation Fund for recovery of Colorado River threatened and endangered fish.

Following consultation with the USFWS and Wyoming Department of Environmental Quality-Water Quality Division (WDEQ-WQD), it was determined that augmentation of surface water flows in North Barrel Springs Draw and Muddy Creek from one of two existing groundwater wells on the CBGA was potentially feasible. Assuming that neither of these wells would discharge hydrocarbons (e.g., oil) with the water, no NPDES permits would be required (written communication, June 1994, with John Wagner, WDEQ-WQD). Water discharged would be of appropriate quality (i.e., WDEQ Class II - livestock quality [WDEQ 1990]) and the discharge pattern would mimic natural flow cycles within the North Barrel Springs drainage (personal communication, May 1994, with Steve Brockmann,

USFWS). Further consultation with the Wyoming State Engineers Office (WSEO) regarding the change in use of water from these wells, and all appropriate WSEO permitting procedures would be conducted prior to discharging any water to the surface.

Based upon monthly flow data for North Barrel Springs Draw, flows to the Draw would be increased by approximately 25% of the mean monthly flow rate (Table 5.1). Water would be discharged between April and September of each year, with the greatest discharges occurring in April and May and the lowest occurring in August and September. Total annual discharge into the Muddy Creek drainage would be approximately 5,277,600 gallons of water; the amount of water annually removed from Muddy Creek for use in project activities would not exceed this total. Appropriate erosion control and energy dissipating structures would be installed prior to discharge to ensure that erosion, turbidity, and

Table 5.1 Mean, Maximum, and Potentially Augmented Flow Rates (gpm) for North Barrel Springs Draw, Creston/Blue Gap Natural Gas Project, Carbon County, Wyoming, 1994.[1]

	Month						
Flow Rate	April	May	June	July	August	September	Annual Total
Mean flow rate	112.2	152.6	62.8	85.3	22.4	35.9	--
Maximum flow rate	--	251.3	94.3	170.6	35.9	49.4	--
Potential increase in flow rate[2]	30.0	40.0	15.0	20.0	5.0	10.0	--
Augmented flow rate[3]	142.2	192.6	77.8	105.3	27.4	45.9	--
Potential increase in discharge (gal)	1,296,000	1,785,600	648,000	892,800	223,200	432,000	5,277,600

[1] Adapted from BLM (1993).
[2] Approximately 25% of mean flow rate.
[3] Augmented flow rate = mean flow rate + potential increase in flow rate.

sedimentation problems do not arise as a result of the proposed discharge. Water discharges would be regularly monitored to ensure that waters remain of adequate quality (i.e., free of hydrocarbons) and that discharges do not augment flow rates in North Barrel Springs Draw beyond its existing flow capacity.

Water discharges to North Barrel Springs Draw would occur during the first 10 years of project operations (i.e., during the period when drilling, completion, and testing operations are most likely to occur). Total discharge for the 10 year period would be approximately 53 million gallons.

6.0 SPECIES ACCOUNTS

This chapter presents a discussion of the status, habitat, potential effects, and mitigation for TE&C animal and plant species that may occur in the CBGA and surrounding area. A summary of the potential effects and mitigations is presented in Table 6.1.

6.1 MAMMALS

6.1.1 Black-footed Ferret

6.1.1.1 Status

The black-footed ferret (BFF) is a federal endangered species.

6.1.1.2 Habitat

BFFs were once distributed throughout the high plains of the Rocky Mountain and western Great Plains regions (Forrest et al. 1985). Prairie dogs are the main food source of BFFs (Sheets et al. 1972), and few BFFs have been historically collected outside prairie dog colonies (Forrest et al. 1985). Black-footed ferrets were considered extinct until a small population was discovered near Meeteetse, Wyoming, in 1981. Following outbreaks of distemper, what remained of this BFF population was brought into captivity and a captive breeding program was initiated. BFFs were successfully reintroduced in the Shirley Basin of central Wyoming in 1991; this population continues to steadily increase with the aid of annual supplemental releases.

No confirmed historic or recent BFF sightings have been recorded for the CBGA. BFF surveys conducted by Postovit (1990) in the central portion of the CBGA resulted in no ferret sightings.

Table 6.1 Summary of Potential Effects and Mitigations for Federal Threatened, Endangered, and Candidate Species and Their Habitats on and Adjacent to the CBGA, Creston/Blue Gap Natural Gas Project, Carbon and Sweetwater Counties, Wyoming, 1994.

Species	Level of Impact to Species Without Mitigation[1]	Level of Impact to Habitat Without Mitigation[1]	Mitigation Measures
Black-footed Ferret	0; not present	0; not present	Search per USFWS guidelines to ensure no ferrets are in areas to be disturbed.
Swift fox	0; not present	0; not present	None.
Bald Eagle	0; no known nests or roosts in area	0; no known nests or roosts in area	If nests or roosts are found in the area, they would be avoided during seasons of activity.
Black Tern	0; rare visitors	0; aquatic habitats will be avoided	None.
Columbian Sharp-tailed Grouse	0; not present	0; only potential marginal habitat available	None.
Ferruginous Hawk	U; foraging birds may be displaced from disturbed areas	U; small amount of available foraging habitat will be disturbed	Nest searches would be conducted; there would be no surface disturbance within 0.75 mi of active nests during breeding season; artificial nest structures would be erected to replace nests built on ancillary structures.
Loggerhead Shrike	U; foraging birds may be displaced from disturbed areas	U; small amount of foraging habitat would be disturbed	Site-specific searches for shrike nests would be conducted; nesting habitat would be avoided where possible.
Long-billed Curlew	0; rare visitor	0; only potential habitat available	None.
Mountain Plover	U; plovers not confirmed as present in the area	U; small amount of potential nesting and foraging habitat would be disturbed	Site-specific searches for nesting plovers would be conducted; areas where nests are found would be avoided.
Northern Goshawk	0; rare visitor	0; not present	None.
Peregrine Falcon	0; rare visitor; no known nests in the area	0; nesting habitat not present	If nests are found on the area, they would be avoided during the breeding season.

Table 6.1 (Continued)

Species	Level of Impact to Species Without Mitigation[1]	Level of Impact to Habitat Without Mitigation[1]	Mitigation Measures
White-faced Ibis	0; rare visitor	0; nesting habitat not present	None.
Whooping Crane	0; not present	0; not present	None.
Bonytail Chub	0; not present	0; no degradation of downstream waters	Flow augmentation to ensure no loss of water to downstream fish habitats; proper and adequate construction techniques would be used when waterways must be crossed.
Colorado River Cutthroat Trout	0; present in the Little Snake River	0; no degradation of downstream waters	Same as above.
Colorado Squawfish	0; not present	0; no degradation of downstream waters	Same as above.
Flannelmouth Sucker	U; some flannelmouth suckers may occur in Muddy Creek	U; some turbidity possible if construction occurs on or near Muddy Creek	Same as above.
Humpback Chub	0; not present	0; no degradation of downstream waters	Same as above.
Razorback Sucker	0; not present	0; no degradation of downstream waters	Same as above.
Roundtail Chub	U; some roundtail chub may occur in Muddy Creek	U; some turbidity possible if construction occurs on or near Muddy Creek	Same as above.
Contracted Indian Ricegrass	U; populations occur on the area	U; some individual plants may be disturbed during construction, but populations would not be jeopardized	Site-specific surveys would be conducted for populations; conflict resolution with BLM and USFWS would be undertaken; potential habitat would be avoided where possible.
Gibben's Beardtongue	U; populations suspected to occur on the area	U; some individual plants may be disturbed during construction, but populations would not be jeopardized	Same as above.

[1] Level of impact without mitigation--a relative measure of the intensity or "seriousness" of the project's impacts if only the project's general or project-wide mitigation measures were implemented.
0 = No impact.
U = Unlikely to adversely affect.

6.1.1.3 Potential Effects

At present, it is anticipated that there would be no impact to this species due to the proposed action or alternatives because no BFFs are known to occur in the area.

6.1.1.4 Mitigation Measures

Although it is very unlikely that BFFs are present in the vicinity of the proposed project, white-tailed prairie dog colonies are scattered throughout the CBGA and adjacent areas and could provide a potential prey base and habitat for BFFs. Existing information concerning the location and distribution of prairie dog towns within the CBGA indicates that there are numerous clusters of prairie dog colonies scattered throughout the area, and some of these colonies may encompass several hundred acres (personal communication, October 1993, with Bob Luce, WGFD). If sufficient acreage and density of prairie dog colonies are present for potential BFF habitat (as defined in USFWS guidelines [1989]) in areas to be disturbed by the proposed project, a search per USFWS guidelines would be made on a well-by-well basis to ensure that ferrets are not present in the area prior to construction activity.

6.1.2 Swift Fox

6.1.2.1 Status

The swift fox is a federal C2 candidate species.

6.1.2.2 Habitat

The swift fox is a resident of the northern Great Plains, from the Rocky Mountain foothills to Texas, and the CBGA is within the species' historic range (Clark and Stromberg 1987). In Wyoming, this species primarily inhabits the eastern Great Plains grasslands, occasionally

utilizing agricultural lands and irrigated native meadows. Observations of the species have recently been reported from the Shirley Basin area. There have been no recent sitings of the swift fox in the CBGA. Prey items for the swift fox include small mammals, insects, and birds (WGFD 1992).

6.1.2.3 Potential Effects

Because swift fox are no longer likely to occur in the CBGA, it is unlikely that this species would be impacted by the proposed action or alternatives.

6.2 BIRDS

6.2.1 Bald Eagle

6.2.1.1 Status

The bald eagle is a federal endangered species.

6.2.1.2 Habitat

Bald eagles require cliffs, sheltered canyons, or large trees associated with concentrated food sources (e.g., fisheries, waterfowl concentration areas) for nesting or roosting areas (Edwards 1969, Snow 1973, Call 1978, Steenhof 1978, Peterson 1986). Bald eagles forage over great distances during the non-nesting season and scavenge on carcasses of animals such as deer and pronghorn.

No known bald eagle nests or winter roosts are present on or within 2 mi of the CBGA; the lack of suitable nesting or winter roosting habitats within the CBGA precludes its use for such activities by bald eagles. Bald eagles, however, have been observed flying over and

foraging on the area (WGFD 1993), and concentrated winter roost sites occur along the Little Snake River approximately 6 mi south/southeast of the CBGA. These birds tend to forage on road-killed deer in the area (personal communication, November 1993, with Bob Oakleaf, WGFD).

6.2.1.3 Potential Effects

Migrating bald eagles and those wintering in the Little Snake River drainage may occasionally use the CBGA for foraging; however, such use would likely be intermittent and for relatively short periods. Given this intermittent use and the lack of nesting and roosting habitat on the CBGA, it is anticipated that there will no impact to this species from either the proposed action or alternatives.

6.2.1.4 Mitigation Measures

In the unlikely event that bald eagle roosting areas are found within the CBGA, a no surface occupancy restriction would be applied to a 1 mi buffer zone around winter roosts, and the area would be closed to surface-disturbing activities (e.g., construction, drilling) from November 1 through April 1. If an active bald eagle nest is found within the CBGA, no activity or surface disturbance would be allowed within a 1 mi radius of the nest between February 1 and July 31.

6.2.2 Black Tern

6.2.2.1 Status

This bird is a federal C2 candidate species.

6.2.2.2 Habitat

Black terns are spring and summer visitors to the United States, frequenting marshes and aquatic areas as feeding and breeding sites (Scott 1987, Ehrlich et al. 1988, WGFD 1992). Nests are usually constructed in dense emergent vegetation, often on top of muskrat homes, floating debris, or little knolls in marshy areas (Bailey and Niedrach 1965, Ehrlich et al. 1988). Loss of wetland areas may be contributing to the decline of this species (Ehrlich et al. 1988).

The lack of extensive wetland areas within or adjacent to the CBGA may be the reason for the lack of observations of this species in the project area. There are only two recorded observations of black terns within or adjacent to the CBGA: one in the northern CBGA and the other south of the project area, along the Little Snake River.

6.2.2.3 Potential Effects

Because black terns are only rare visitors to the CBGA and wetlands in the area would be avoided, where possible, during construction, this species would not be impacted by the proposed action or alternatives.

6.2.3 Columbian Sharp-tailed Grouse

6.2.3.1 Status

The Columbian sharp-tailed grouse is a federal C2 candidate species.

6.2.3.2 Habitat

The Columbian sharp-tailed grouse is one of two sharp-tailed grouse subspecies found in Wyoming, the other being the plains sharp-tailed grouse. The Columbian sharp-tailed grouse is restricted to sage-dominated mountain shrub communities in south-central Wyoming (Klott n.d.). In addition to sage, these communities contain serviceberry, chokecherry, snowberry, bitterbrush, and rabbitbrush. Although Columbian sharp-tailed grouse were once found throughout western and southwestern Wyoming, herbicide treatments of large blocks of sagebrush/grass and mountain shrub habitats between 1950 and 1980 may have significantly reduced available habitat for these grouse.

There are no recorded observations of Columbian sharp-tailed grouse within or immediately adjacent to the CBGA. The majority of recorded observations for this species occur to the south and east of the project area (WGFD 1993), where the birds gather in leks during the spring breeding season.

6.2.3.3 Potential Effects

Individual Columbian sharp-tailed grouse may occasionally wander onto the CBGA or adjacent areas during foraging or dispersal periods, but encounters with the species would be very rare. Therefore, there would be no impacts to Columbian sharp-tailed grouse resulting from the proposed action or alternatives.

6.2.4 Ferruginous Hawk

6.2.4.1 Status

The ferruginous hawk is a federal C2 candidate species.

6.2.4.2 Habitat

Ferruginous hawks breed in semi-arid plains and intermountain areas of the Great Basin and Great Plains (Evans 1983). Nests of this species are often located on low cliffs, buttes, and cutbanks (Call 1978). It may also nest in junipers or sagebrush. Ferruginous hawks feed primarily on small to medium-sized mammals (e.g., jackrabbits, cottontails, ground squirrels, prairie dogs) (Sherrod 1978).

Data gathered intermittently since 1976 indicate that the majority (197 or 57.6%) of the raptor nests on or immediately adjacent to the CBGA are ferruginous hawk nests. These hawks also regularly use the CBGA and surrounding areas during foraging activity.

6.2.4.3 Potential Effects

The principle threat to ferruginous hawks from project activities is disturbance during nesting. Potential conflicts between active nest sites and project-related activities would be resolved by the BLM, in consultation with the USFWS and WGFD, to ensure that no impacts would occur to ferruginous hawks or their nesting success.

There would be a LOP loss of 2,249 acres of potential ferruginous hawk foraging habitat within the CBGA as a result of the proposed action; this represents approximately 1.1% of the CBGA. LOP loss of potential foraging habitat under the two alternatives would range from 1,579 acres (Alternative 1) to 2,695 acres (Alternative 2); this represents 0.8 to 1.3% of the entire CBGA. Impacts to ferruginous hawks on the CBGA resulting from foraging habitat losses would not likely adversely affect the species under either the proposed action or alternative actions; sufficient foraging habitat in areas adjacent to disturbance sites would be available to support ferruginous hawks.

Reduction in ferruginous hawk prey species is not anticipated to be a major concern since disturbance would be scattered throughout the CBGA. Therefore, the reduction in prey species would occur over a relatively large number of potential ferruginous hawk territories, limiting prey reduction to negligible levels in any one territory.

6.2.4.4 Mitigation Measures

Although no potential conflict between active ferruginous hawk nest sites and project activity is anticipated at present, any that may arise during the project would be resolved by the BLM, in consultation with the USFWS and WGFD, to ensure that no impacts would occur to the species. Surveys would be conducted to document the status of ferruginous hawk nests so that appropriate protective measures are stipulated during APD and ROW reviews. Activities near active ferruginous hawk nests would be prohibited within a 0.75 mi radius or other distance as necessary to avoid disturbing birds from February 1 through July 31.

Ferruginous hawks occasionally construct nests on well site facilities in Wyoming (personal communication, January 1992, with Bob Tigner, BLM). In the event ferruginous hawks nest on production/operation facilities, artificial nesting structures would be provided as directed by the BLM in consultation with the USFWS. Artificial nesting structures have been successfully used by ferruginous hawks in the region (Call and Tigner 1991). SOCO and other CBGA operators would cooperate in the erection of artificial nesting structures.

6.2.5 Loggerhead Shrike

6.2.5.1 Status

The loggerhead shrike is a federal C2 candidate species.

6.2.5.2 Habitat

In Wyoming, loggerhead shrikes inhabit sagebrush-grassland areas associated with stands of juniper and larger shrubs (WGFD 1992). These habitats provide ample open areas in which to forage for insects and small vertebrates (Craig 1978, Bystrak 1983), as well as trees and shrubs in which to build their large, bulky nests (Graber et al. 1973). Declines in loggerhead shrike populations have been noted over the past 40 years, and the declines appear to be most significant near the periphery of their range (Bystrak 1983). Although reasons for the decline are unknown, it is possible that habitat changes and pesticide use may play a role.

Several observations of loggerhead shrikes both within and adjacent to the CBGA have been recorded (WGFD 1993), and the species is a fairly common summer resident of the area (WGFD 1992). Loggerhead shrikes likely nest within the CBGA.

6.2.5.3 Potential Effects

There would be a LOP loss of 2,249 acres of potential loggerhead shrike foraging and breeding habitat within the CBGA as a result of the proposed action; this represents approximately 1.1% of the CBGA. LOP loss of potential foraging and breeding habitat under the two alternatives would range from 1,579 acres (Alternative 1) to 2,695 acres (Alternative 2); this represents 0.8 to 1.3% of the entire CBGA. Impacts to loggerhead shrikes on the CBGA resulting from foraging and breeding habitat loss are not likely to adversely affect the species under either the proposed action or alternatives due to the amount of available foraging and breeding habitat and the scattered nature of habitat disturbance; it is anticipated that loggerhead shrikes would not be permanently displaced.

6.2.5.4 Mitigation Measures

Surveys for active loggerhead shrike nests would be implemented during on-site inspections of proposed ROWs and well locations conducted as components of ROW application and APD review processes. If active loggerhead shrike nests are found on the area to be disturbed, construction activities would be rescheduled such that the birds would not be disturbed.

6.2.6 Long-billed Curlew

6.2.6.1 Status

This species is a federal 3C species.

6.2.6.2 Habitat

Long-billed curlews breed in arid grasslands and sagebrush/grasslands of the western Great Plains and Great Basin (Howe 1983). They arrive in the central Rocky Mountains in April (Behle and Perry 1975) and build nests in very open areas consisting of shallow scrapes in areas of shortgrass prairie (Allen 1980).

A single long-billed curlew was observed at a pond in the southern CBGA (WGFD 1993). It is likely that curlews occasionally use the CBGA for foraging or as a stopover during migration, but are probably in the area for only short periods of time. Nesting activity may occur within the CBGA, but the absence of recorded breeding observations of long-billed curlews indicates that this is probably a rare event.

6.2.6.3 Potential Effects

Due to the low number of observations and the transitory nature of long-billed curlew within the CBGA, it is unlikely that the proposed project would impact this species.

6.2.7 Mountain Plover

6.2.7.1 Status

The mountain plover is a federal C1 candidate species.

6.2.7.2 Habitat

Mountain plovers primarily inhabit the high, dry shortgrass plains east of the Rocky Mountains (Dinsmore 1983). The focus of breeding activity appears to be southeastern Wyoming and eastern Colorado (Graul and Webster 1976). Nesting habitat is associated with blue grama (*Bouteloua gracilis*) and buffalograss (*Buchloe dactyloides*) (Graul and Webster 1976). In Colorado, the mountain plover diet is composed of 99.7% arthropods, with beetles, grasshoppers, crickets, and ants the most important food items (Baldwin 1971). Loss of breeding habitat to cultivation and loss of prey base through pesticide use are two major threats to the mountain plover (Wiens and Dyer 1975). Livestock grazing may help maintain the open blue grama-buffalograss habitat favored by mountain plovers so grazing may be beneficial to the species (Klipple and Costello 1960). Mountain plovers have not been observed within the CBGA, but do inhabit areas similar to those present in the area (i.e., upland and lowland grasslands), and have been observed in areas adjacent to the CBGA.

6.2.7.3 Potential Effects

Loss of potential mountain plover breeding and foraging habitat may occur due to proposed project activities; however, due to the limited and scattered nature of habitat disturbance, it is anticipated that this species would not be permanently displaced, and mountain plover would not likely be adversely affected by the proposed action or alternatives.

6.2.7.4 Mitigation Measures

Surveys for nesting mountain plovers would be implemented during on-site inspections of proposed ROWs and well locations conducted as components of ROW application and APD review processes. If mountain plover nests are found on the area, construction activities would be rescheduled such that the birds would not be disturbed.

6.2.8 Northern Goshawk

6.2.8.1 Status

The northern goshawk is a federal C2 candidate species.

6.2.8.2 Habitat

The northern goshawk inhabits coniferous forests, especially those with a significant Douglas fir and lodgepole pine component (WGFD 1992). Goshawks forage in a variety of habitats, including sagebrush-grassland areas adjacent to stands of coniferous forest. Nests are often built high (i.e., greater than 30 ft) in coniferous trees; some goshawks have been observed nesting in mature cottonwoods along riparian corridors (Call 1978).

Northern goshawks have not been observed on the CBGA; a single bird was observed approximately 4.5 mi east of the CBGA in mixed juniper forest (WGFD 1993).

6.2.8.3 Potential Effects

Since the CBGA lacks appropriate northern goshawk habitat and no goshawks have been observed within the CBGA, the proposed action or alternatives would not impact this species.

6.2.9 Peregrine Falcon

6.2.9.1 Status

The peregrine falcon is a federal endangered species.

6.2.9.2 Habitat

Peregrine falcons nest on tall cliffs, usually within 1 mi of a stream or river, or extensive brush or woodlands, that provide concentrated food sources and open areas to hunt (Call 1978, Snow 1972). Suitable nest sites for peregrine falcons are found in substantial rock outcroppings, usually with a southern exposure, and with a small cave or overhanging ledge large enough to contain three to four full-grown nestlings (Wilderness Research Institute 1979). Peregrine falcons feed almost exclusively on birds, many of which are associated with riparian zones and large bodies of water.

No known peregrine falcon nests occur on or within 2 mi of the CBGA, nor have any peregrine falcons been reported in the area. The absence of suitable cliffs within the CBGA precludes peregrine falcon nesting, although the area may be occasionally used for hunting by wintering or migrating peregrines.

6.2.9.3 Potential Effects

There is no evidence that peregrine falcons frequently utilize habitats in the vicinity of the CBGA. It is expected, therefore, that implementation of the proposed or alternative projects would not have any substantial direct or indirect impact on the peregrine falcon.

6.2.9.4 Mitigation Measures

In the unlikely event that a peregrine falcon nest is found within or immediately adjacent to the CBGA, no activity or surface disturbance would be allowed for up to a 1 mi radius from the nest between February 1 and July 31.

6.2.10 White-faced Ibis

6.2.10.1 Status

This bird is a federal C2 candidate species.

6.2.10.2 Habitat

White-faced ibises frequent marshes, wet-moist meadows, lake shores, and irrigated meadows (WGFD 1992). They breed in colonies ranging from a few to several thousand birds in extensive freshwater marshes sporadically distributed from the Pacific Coast to the Great Plains (Erwin 1983). Breeding colonies in Wyoming have been observed at Hutton Lake National Wildlife Refuge in southeastern Wyoming and several locations in southwestern Wyoming (WGFD 1992).

Although white-faced ibises have been occasionally observed within and adjacent to the CBGA, no breeding colonies occur within the area. The CBGA contains very little potential

nesting habitat for the species. Ibises observed on the CBGA are likely transient individuals using the area for brief periods for resting and foraging during migration.

6.2.10.3 Potential Effects

Because of the lack of potential nesting habitat and low numbers of ibises that use the area, no impacts to white-faced ibises are anticipated to result from either the proposed action or alternatives.

6.2.11 Whooping Crane

6.2.11.1 Status

The whooping crane is a federal endangered species.

6.2.11.2 Habitat

Whooping cranes, which feed on a variety of plants and animals, prefer wet-moist meadow grasslands, sedge meadows, irrigated native and introduced meadows, and marshes (WGFD 1992). All recorded observations of whooping cranes in Wyoming have occurred in the western part of the state; these birds are probably part of the Gray's Lake fostering project (WGFD 1992).

No whooping cranes have been observed within or adjacent to the CBGA, and the likelihood of their appearance in the area is extremely low.

6.2.11.3 Potential Effects

Since whooping cranes do not occur within the CBGA, no impacts to the species would occur as a result of project activities.

6.3 FISH

6.3.1 Bonytail Chub, Colorado Squawfish, Humpback Chub, and Razorback Sucker

6.3.1.1 Status

These fish are federal endangered species.

6.3.1.2 Habitat

The bonytail chub, Colorado squawfish, humpback chub, and razorback sucker are residents of the Green and Colorado River systems (USFWS 1987, Tyus and Karp 1989, Matthews 1990). Although once abundant throughout both of these river systems, all four species are now limited to reaches of river that are either relatively undisturbed or controlled to provide appropriate flows. Reservoir impoundments and water diversions are the main threats to these species.

None of these species occur within or adjacent to the CBGA; it is likely that the closest occurrence of these species is in the lower Little Snake River drainage of Colorado (Tyus and Karp 1989).

6.3.1.3 Potential Effects

No impact to these downstream fish species from the proposed or alternative actions is anticipated because of the mitigation measures described in the following section.

6.3.1.4 Mitigation Measures

If water is withdrawn from Muddy Creek for use in drilling activities, flows would be augmented or monetary contributions provided as described in Chapter 5.0; annual surface water withdrawals would not exceed discharge volumes. When construction within waterways is required, proper construction techniques and timing would be used to avoid excess turbidity and sedimentation (see Chapter 5.0).

6.3.2 Colorado River Cutthroat Trout, Flannelmouth Sucker, and Roundtail Chub

6.3.2.1 Status

These fish are federal C2 candidate species.

6.3.2.2 Habitat

The Colorado River cutthroat trout, flannelmouth sucker, and roundtail chub are residents of the Green and Colorado River systems (Baxter and Simon 1970, Lee et al. 1980). As with the endangered fish species described in Section 6.3.1, declines in populations of these C2 species are attributable to stream and river degradation from impoundment and diversion projects within the Green and Colorado River systems.

All three species occur in the Little Snake River south and east of the CBGA (Baxter and Simon 1970, Johnson and Oberholtzer 1987). Flannelmouth sucker and roundtail chub have

also been observed in Muddy Creek immediately south of the CBGA (Johnson and Oberholtzer 1987, WGFD 1993); it is quite possible that these two species move up into the CBGA during periods of high flow. A reintroduction of Colorado River cutthroat trout in the upper Muddy Creek drainage northeast of the CBGA is planned by the WGFD (personal communication, October 1993, with Bill Wengert, WGFD).

6.3.2.3 Potential Effects

Impacts resulting from the proposed or alternative actions to flannelmouth sucker and roundtail chub that occur in Muddy Creek within the CBGA will be negligible; no impacts to upstream (i.e., Colorado cutthroat trout) or downstream fish are anticipated.

6.3.2.4 Mitigation Measures

Potential mitigation measures for these species are the same as those presented in Section 6.3.1.4.

6.4 PLANTS

6.4.1 Contracted Indian Ricegrass

6.4.1.1 Status

Contracted Indian ricegrass is a federal C2 species.

6.4.1.2 Habitat

This grass species is found on the dry soils of plains and hills throughout central, southwestern, and northeastern Wyoming (Dorn 1988). It is now thought to be more widely

distributed than first believed (personal communication, June 1994, with Connie Breckenridge, BLM).

Populations of contracted Indian ricegrass have been observed throughout the CBGA.

6.4.1.3 Potential Effects

Given the limited amount and scattered nature of disturbance associated with the proposed or alternative actions, impacts to populations of contracted Indian ricegrass are not likely to occur, therefore, the species is not likely to be adversely affected.

6.4.1.4 Mitigation Measures

Surveys for contracted Indian ricegrass would be implemented during on-site inspections of proposed ROWs and well locations conducted as components of ROW application and APD review processes. Potential conflicts between contracted Indian ricegrass populations and project-related activities would be resolved by the BLM, in consultation with the USFWS, to ensure that no impacts would occur to this species. Habitats in which ricegrass populations occur, or are likely to occur, would be avoided where possible.

6.4.2 Gibben's Beardtongue

6.4.2.1 Status

Gibben's beardtongue is a federal C2 candidate species.

6.4.2.2 Habitat

This species favors exposed outcrops of shale and sandstone with slopes of 20 to 30 degrees on poorly developed soils. Gibben's beardtongue is subject to minimal competition from other plants (Dorn 1990, BLM 1992). Dorn (1990) found that populations of Gibben's beardtongue were stable, and recommended that the status of this plant be downgraded to Category 3C due to the lack of potential threats.

Although Gibben's beardtongue has not been documented to occur within the CBGA, it has been observed at locations within 0.5 mi of the CBGA boundary (WNDD 1993a). It is likely that populations of this plant also occur within the CBGA.

6.4.2.3 Potential Effects

Given the limited amount and scattered nature of disturbance associated with the proposed or alternative actions, impacts to populations of Gibben's beardtongue are not likely to adversely affect the species.

6.4.2.4 Mitigation Measures

Potential mitigation measures for this species are the same as those described in Section 6.4.1.4.

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